

Particulate material suitable for the removal of heavy metals

Description of Technology: The patent's objective is to stabilize peat or a finely ground solid to make them more useful in extracting heavy metals from an aqueous effluent by encapsulating them in a shell of polyvinyl chloride to utilize the adsorptive qualities of the peat or the finely ground solid while imparting structural integrity thereto. The absorptive qualities of peat are improved by either modifying it in its raw form or by modification during or after the encapsulation process. The absorptive qualities of the solid are also improved by modification during or after the encapsulation process.

Patent Listing:

1. **US Patent No. 5,296,293**, Issued March 22, 1994, "Particulate material suitable for the removal of heavy metals"

http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HTTOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=5296293.PN.&OS=PN/5296293&RS=PN/5296293

Market Potential: Raw wastewater generated by industry and contaminated ground water contain substantial concentrations of metal ions, oxides, cyanides and other substances. Common pre-treatment techniques of wastewater or ground water typically involve flocculation, hydroxide or sulfide precipitation, clarification and pH adjustment of the water. A number of in-line modifications of the usual pre-treatment techniques or substitution of less toxic oxidants or cleaners can be employed successfully to reduce or eliminate residual contaminants. However, these techniques often do not remove all the metals from the wastewater. Consequently, levels exceeding legislated discharge standards are common. Moreover, these techniques are often complicated and/or are expensive to employ.

Because of the large metal removal capacity and the natural abundance of peat, peat adsorption is potentially a cheap and effective technique for treating wastewater or contaminated ground water. Various chemical and physical properties of peat allow it to actively adsorb dissolved and colloidal metals from industrial effluents. Furthermore, peat can adsorb cyanide and other organic compounds from water containing heavy metals.

The three main competitors in the water services market are California Water Services Group, American States Water Co., and American Water Works. California Water Services Group had \$26 million in net profit in 2004. American States Water Co. had a net profit of \$18.5 million in 2004. American Water Works serves 20 million people in the US and Canada.

Benefits:

 Peat has potential to be a cheaper and more effective method for treating wastewater or contaminated ground water.

Applications:

- Removing heavy metals from wastewater or contaminated ground water.
- Improving the absorptive qualities of peat to better remove heavy metals from aqueous mixes.